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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/541,844

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Bum-Gyu Choi

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EXAMINER

CAMERON, ERMA C

ART UNIT

PAPER NUMBER

1792

MAIL DATE

DELIVERY MODE

12/31/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/541,844	Applicant(s) CHOI ET AL.	
	Examiner /Erma Cameron/	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 4-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 4-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. The rejection of Claims 4 and 6 under 35 U.S.C. 112, second paragraph, is withdrawn because of the amendment filed 9/29/2009.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 and 4-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishikawa et al (US2001/0055892) taken in view of KR 20020097415 or KR 20030000709.

‘892 teaches formation of an insulating film on a semiconductor device by hydrolyzing and condensing a silane of formula 1-3 and formula 4. In formula 1, R may be H, thus being hydrosilane. Water and organic solvent are present. A base catalyst like ammonia is also present. After application to a substrate, the coating is dried and cured. [0006]-[0015] [0046] [0129]-[0130]. Additives such as colloidal silica may be present [0085].

In formula 1 of ‘892, when R=H and a=1, formula 1 meets the limitations of Formula 1 of claim 1 [0008]-[0009].

The composition may also contain compounds that meet the limitations of Formula 3 or 4 of claim 4, such as formula 2 of ‘892 which meets the limitations of formula 3 of claim 4 where p=0 and R4 is alkoxo [0009]-[0010].

‘892 fails to teach that the MW is at least 5000.

Both ‘415 and ‘709 teach that the MW of similar hydrogen containing Si resins is 500 to 1 million, with the desirable range between 1000 and 1 million (‘415: page 15 of translation; ‘709: page 12 of translation). Overlapping ranges are prima facie evidence of obviousness.

It would have been obvious to one of ordinary skill in the art to have used the MW of the ‘415 or ‘709 resins, and to select the overlapping portion of the ranges disclosed by the references because overlapping ranges have been held to be a prima facie case of obviousness.

See In re Malagari 182 USPQ 549

Response to Arguments

The applicant has argued that ‘892 uses a base catalyst and that the two KR references teach an acid catalyst, and therefore the KR references cannot be combined with the ‘892

reference, and in addition because the catalysts are different, the MW of the resins would be different.

The examiner disagrees. Both KR references teach that a base catalyst may be used ('415: page 14 of translation; '709: page 11 of translation). Therefore, because all three references teach a base catalyst, either of the KR references may be combined with '892, and the MW of the resins of all three references would be expected to be in the same range, because the same catalysts are used.

5. Claims 1 and 4-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over KR 20020097415.

See translation.

'415 teaches making an insulating membrane by hydrolysis condensing Chemical Formula 1 and 2. If R5 is H in formula 2, the polymer would meet the limitations of formula 1 of claim 1 (pages 2-3 of translation). Additives such as organic molecules may be present (p 10). A base catalyst may be present (p 14). The MW of the formed polymer is 500-1000000, which overlaps with the MW range claimed by applicant (p 15). After application to a semiconductor or other electronic device, the coating is dried and cured (p 17, 19).

Response to Arguments

The applicant has argued that '415 teaches use of an acid catalyst. However, '415 also teaches use of a base catalyst (page 14).

The applicant also argues that the Examples 1 and 2 of '415 prepared in the presence of an acid catalyst have higher dielectric constants than embodiments of 1 and 2 of the present application. However, this is not a fair comparison. A fair comparison would be to prepare resins using the base catalysts of '415 and comparing these resins to the resins of the present application.

6. Claims 1 and 4-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over KR 20030000709.

See translation.

'709 teaches making an insulating membrane by hydrolysis condensing Chemical Formula 1, 2, 4 and 4. Formula 1 overlaps with formula 1 of claim 1, and formula 3 overlaps with formula 4 of claim 4 (pages 5-7 of translation). Additives such as organic molecules may be present (p 12). A base catalyst may be present (p 11). The MW of the formed polymer is 500-1000000, which overlaps with the MW range claimed by applicant (p 12). After application to a semiconductor or other electronic device, the coating is dried and hardened (p 13-16).

Response to Arguments

The applicant has argued that '709 teaches use of an acid catalyst. However, '709 also teaches use of a base catalyst (page 11).

The applicant also argues that the Practical Example 1 of '709 prepared in the presence of an acid catalyst has a higher dielectric constant than embodiments of 1 and 2 of the present application. However, this is not a fair comparison. A fair comparison would be to prepare resins

using the base catalysts of '709 and comparing these resins to the resins of the present application.

7. Claims 1 and 4-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Albano et al (US2002/0106500).

'500 teaches forming a low dielectric material to be used on electronic devices with hydridosilane, organic solvent and a base catalyst as starting materials. [0017] [0024] [0026] [0033] [0035] Additives such as water and fillers maybe present [0034] [0036] The MW of the resulting resin is 1200 to 100000, which overlaps with the range claimed by applicant. The starting silane meets the limitations of formula 1. The material may additionally contain methylsilsesquioxane [0017], which would meet the limitations of formula 3 in claim 4.

Response to Arguments

The applicant has argued that '500 does not disclose the synthesis of the siloxane compounds in detail. The examiner does not comprehend which details the applicant is referring to, and therefore cannot respond further.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to /Erma Cameron/ whose telephone number is 571-272-1416. The examiner can normally be reached on 8:30-6:00, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Erma Cameron/
Primary Examiner
Art Unit 1792

December 23, 2009